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(FILE 'HOME' ENTERED AT 19:38:31 ON 10 SEP 2001)

FILE 'CA' ENTERED AT 19:38:35 ON 10 SEP 2001

L1 56788 S (ULTRAVIOLET OR ULTRA VIOLET) (4A) (SPECTRO? OR PHOTOSPECTRO? OR
WAVELENGTH)
L2 125 S L1 AND (ATR OR ATTENUAT? (2A) REFLECT?)
L3 285 S L1 AND (KRAFT OR PULP? OR PAPER (2A) MAKING OR PAPERMAKING)
L4 3 S L2 AND L3
L5 6 S L2-3 AND (MULTIVARIAT? OR LEAST SQUARES OR REGRESSION)
L6 28 S L2 AND (PROCESS OR STREAM OR FLOW CELL)
L7 126 S L1 AND FLOW CELL
L8 585 S L1 AND (MULTIVARIAT? OR LEAST SQUARES OR REGRESSION)
L9 5 S L8 AND (STREAM OR FLOW CELL)
L10 35 S L2 AND (MULTICOMPONENT OR MULTI COMPONENT OR ANALYTICAL OR ANALYTE)
L11 28 S L3 AND (SULIDE OR CARBONATE OR HYDROXIDE OR NAHS OR NASH OR NA2CO3 OR
NAOH OR KOH)
L12 217 S L4-7, L9-11
L13 194 S (L12 NOT PY>1999) OR (L12 AND PATENT/DT)

=> d l13 bib, ab 1-194

L13 ANSWER 5 OF 194 CA COPYRIGHT 2001 ACS
AN 132:269097 CA
TI Online diode-array UV spectroscopy of sulfur and nitrogen compounds
AU Driver, Richard D.; Stein, Israel M.
CS NovaChem BV, Newton, MA, 02458, USA
SO Proc. SPIE-Int. Soc. Opt. Eng. (1999), 3859 (Optical Online Industrial
Process Monitoring), 119-129
AB Online, real-time monitoring of gas-phase concns. of S-contg. mols. such as
SO2, H2S, CS2, and N-contg. mols. such as NO, NO2, N2O, and NH3 is of major
importance in pollution monitoring and redn. and in optimizing many gas-
phase industrial processes. A UV optimized, non-solarizing, fiber optic-
based diode-array analyzer system using a 10,000 h MTBF Xe pulsed source
was developed and proven online. An on-board chemometric prediction engine
allows for simultaneous multi-component anal. of measured spectra of sample
gases in real-time. Fiber optic coupling of the analyzer to the gas flow
cell housed within the sampling system allows intrinsically safe
measurement to be conducted on sample gases at temps. $\leq 310^\circ$ and pressures
 ≤ 60 barg. Detection sensitivity down to ppm concns. have been realized,
including such measurement applications as NH3, NO, and H2S monitoring.

✓L13 ANSWER 10 OF 194 CA COPYRIGHT 2001 ACS
AN 132:20768 CA
TI Apparatus for measuring the partial pressure of gases dissolved in liquids
IN Dieckmann, Michael; Buchholz, Rainer
PA Euroferm GmbH i.G., Germany
SO U.S., 10 pp., Cont.-in-part of U.S. Ser. No. 561,910, abandoned.
PI US 6003362 A 19991221 US 1997-878920 19970619
PRAI DE 1994-4445668 A 19941221
AB An method and an app. for measuring the partial pressure of gases dissolved
in liqs. in plants for carrying out biotechnol. and food technol. processes
includes a measuring space which is sepd. by a gas-permeable diaphragm
which is permeable for the gas to be detd. A light emission source
produces a light ray with a wavelength which is absorbed by the gas to be
detd. The light ray is directed into the measuring space. A measuring
device is provided for detg. the light ray leaving the measuring space.
The measuring space, the light emission and the measuring device are

arranged in a rod-shaped probe. The probe is capable of being sterilized. The measuring space is filled with a fluid which does not chem. react with the gas to be detd.

L13
AN ANSWER 14 OF 194 CA COPYRIGHT 2001 ACS
131:324003 CA
TI Applicability of the UV-vis ATR technique to study liquids from pulp industry
AU Romppainen, P.; Savolainen, M.; Keski-Ruismaki, K.; Raty, J.; Keranen, E.
CS Measurement and Sensor Laboratory, University of Oulu, Kajaani, FIN-87400, Finland
SO Process Control Qual. (1999), 11(4), 255-263
AB Results of the application of the attenuated total reflection (ATR) technique in the UV-vis wavelength range to process liqs. from the pulp industry are reported. The exptl. set-up consists of a Xenon light source, an ATR probe, a monochromator, and a CCD detector. The technique is applied in the lab. environment, both to solns. from the pulp process and synthetic model solns. Quant. results are obtained when the method is used to det. lignin concns. However, the technique suffers from drift and a recovery problem causing reproducibility problems when applied to liqs. from the pulp industry. Possible reasons for the obsd. behavior are studied. Reproducible results are obtained by including a washing stage in the measuring sequence.

L13
AN ANSWER 21 OF 194 CA COPYRIGHT 2001 ACS
131:49564 CA
TI Solid-phase UV spectroscopic multisensor for the simultaneous determination of caffeine, dimenhydrinate and acetaminophen by using partial least squares multicalibration
AU Canada, M. J. Ayora; Reguera, M. I. Pascual; Diaz, A. Molina; Capitan-Vallvey, L. F.
CS Department of Physical and Analytical Chemistry, Faculty of Experimental Sciences, University of Jaen, Jaen, E-23071, Spain
SO Talanta (1999), 49(3), 691-701
AB A straightforward flow-through multisensor was developed for the fast simultaneous detn. of caffeine (CF), dimenhydrinate (DMH) and acetaminophen (AAP) based on the integration of their retention and UV detection. A diode array spectrophotometer was used to monitor the inherent UV full-spectra in the range 245-310 nm of the analytes retained on C18 bonded phase beads packed in a flow cell, without requiring addnl. reagents or derivatization processes. The extensively overlapped spectra of the analytes retained on the solid support could be resolved by partial least squares regression. After collecting the response of the multisensor, its active microzone was regenerated by using methanol as the eluting agent, leaving it ready for the next detn. The proposed multisensor has been satisfactorily applied for the anal. of synthetic and real samples with different nominal contents of these active principles.

L13
AN ANSWER 23 OF 194 CA COPYRIGHT 2001 ACS
130:360791 CA
TI Analysis of strongly absorbing chromophores by UV/visible ATR spectroscopy
AU Doyle, Walter M.; Tran, Lani
CS Axiom Analytical, Inc., Irvine, CA, 92614, USA
SO Spectroscopy (Eugene, Oreg.) (1999), 14(4), 46, 48, 50-54
AB This article illustrates the potential of the attenuated total reflectance (ATR) sampling technique for UV/visible anal. and explores ways in which this potential can be maximized. Although UV/visible ATR is far from new, it was largely neglected, perhaps because of the limited range of operating

conditions used in previous work. By the appropriate choice of ATR optical design and operating parameters the authors were able to maximize the sensitivity of the technique for diverse sample conditions. The authors also obsd. artifacts at high concns. of some analytes, which are a result of refractive index dispersion resulting from strong electronic transitions in the vacuum UV region. Of particular interest is the potential for using small amts. of solvent to shift the frequencies of these artifacts so as to optimize the anal. of minor constituents.

✓L13 ANSWER 33 OF 194 CA COPYRIGHT 2001 ACS

AN 129:246789 CA

TI Method and apparatus for monitoring and controlling characteristics of process effluents

IN Garver, Theodore M. Jr

PA Alberta Research Council, Can.

SO PCT Int. Appl., 37 pp.

PI WO 9840721 A1 19980917 WO 1998-CA243 19980310

US 6023065 A 20000208 US 1997-814519 19970310

PRAI US 1997-814519 A 19970310

AB Methods for monitoring and controlling a characteristic of process waters or effluent (esp. from wood pulp bleaching, pulping, and paper making processes utilizing a bleaching agent such as H₂O₂, Na₂S₂O₄, ClO₂, Cl₂, or O₃ or a pulp delignification process utilizing a delignification agent such as NaOH, Na₂S, O₂, Na₂SO₃, and various enzymes including ligninase, xylanase, mannanase, laccase, and peroxidase) entails obtaining at least two measurements of (e.g., UV) light absorption of the effluent, by taking a first measurement measured at a first wavelength, and a second measurement measured at a second wavelength, then detg. a ratio of the two measurements and comparing the ratio to a predetd. interrelationship of the ratio and the characteristic of the effluent, thereby detg. the actual value of the characteristic. App. for monitoring a characteristic of an effluent of a process is also described which comprises means for obtaining at least two measurements of UV light absorption of the effluent, a first measurement measured at the first wavelength, a second measurement measured at a second wavelength and means for comparing the ratio of the two measurements to a predetd. interrelationship of the ratio and the characteristic of the effluent, thereby detg. the actual value of the characteristic.

✓L13 ANSWER 35 OF 194 CA COPYRIGHT 2001 ACS

AN 129:211089 CA

TI Flow-injection gradient dilution for obtaining UV spectra of concentrated solutions

IN Bysouth, Stephen Robert; Tong, Victor Pak-ling

PA Shell Oil Co., USA

SO U.S., 29 pp.

PI US 5801820 A 19980901 US 1996-618181 19960319

AB The invention relates to methods and app. for precise diln. of concd. samples enabling their spectra to be obtained. The spectra thus obtained may then be used for calcn. of the arom. hydrocarbon content in the concd. samples. This invention comprises an arrangement of computer-controlled pumps, an injection valve, a mixing chamber, a flow cell (these components are known as the manifold) and a scanning spectrophotometer, with a sophisticated computational software program. The arrangement generates a reproducible, well-defined gradient from a concd. sample which is continuously scanned and, using the computational software, allows the spectrum of the sample to be derived, even where the majority of the spectrum for the undiluted sample has an absorbance greater than the upper measurable limit of the spectrophotometer. All of the methods described in prior art

publications differ from the present invention by their reliance on calibration (the adjustment of factors used, by comparing spectral data for a std. with its ref. data) or characterization (measurement of the characteristics of the system, e.g., flow rate and mixing vol., and inclusion of these values in the calcn.) of the systems for defining diln. factors, due to measurement of a single species/wavelength. The present invention requires no calibration/characterization for single species measurement since multi-parameters (absorbance at many wavelengths) are monitored or conversely, can be used to obtain spectra of highly concd. samples and therefore det. multiple species. None of the previous systems were used to obtain spectra per se.

L13 ANSWER 44 OF 194 CA COPYRIGHT 2001 ACS

AN 128:54583 CA

TI Applications of the channel flow cell for UV-visible spectroelectrochemical studies. Part 3. Do radical cations and anions have similar diffusion coefficients to their neutral parent molecules?

AU Wang, Rui Lin; Tam, Kin Yip; Compton, Richard G.

CS Physical and Theoretical Chemistry Laboratory, Oxford University, South Parks Road, Oxford, UK

SO J. Electroanal. Chem. (1997), 434(1-2), 105-115

AB A chronoabsorptometric method was used to det. the diffusion coeffs. of electrogenerated radical ions from a wide range of compds. The technique was 1st verified using the well-established ferro/ferricyanide system and excellent agreement between expt. and literature noted. The effect of solvent on the diffusion coeff. was exemplified by the N,N,N',N'-tetramethyl-p-phenylenediamine radical cation in water, ethanol and acetonitrile. The diffusion coeffs. of the radical cation in water ($8.00 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$) and ethanol ($8.23 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$) are 5 to 15% smaller than those of the parent mols., while in acetonitrile the diffusion coeff. ($2.02 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$) is almost equal to that of the parent species. Diffusion coeffs. for the 2,3,5,6-tetrabromo-1,4-benzoquinone radical anion ($1.86 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$), 2,3,5,6-tetrachloro-1,4-benzoquinone radical anion ($2.00 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$) and phenothiazine radical cation ($1.97 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$) were measured in acetonitrile at 25° and are virtually identical to those of the parent compds. Probably for species such as these, the interaction between the radical ion species and the solvent mols. resembles that of the uncharged parent mol. resulting in a diffusion rate very close to that of the latter.

L13 ANSWER 46 OF 194 CA COPYRIGHT 2001 ACS

AN 126:338201 CA

TI Applications of the channel flow cell for UV-visible spectroelectrochemical studies. Part 2. Transient signals

AU Wang, Rui Lin; Tam, Kin Yip; Marken, Frank; Compton, Richard G.

CS Physical Theoretical Chem. Lab., Oxford Univ., Oxford, OX1 3QZ, UK

SO Electroanalysis (1997), 9(4), 284-287

AB The use of the channel flow cell for UV-visible spectroelectrochem. expts. was developed to det. the diffusion coeffs. of electrogenerated species by means of monitoring the transient absorbance response resulting from a potential step at a working electrode immediately upstream of the incident spectrophotometric beam. The technique is applied to measure the diffusion coeff. of tris(4-bromophenyl)amine (TBPA) radical cation in acetonitrile at 25°. The diffusion coeff. of electrogenerated TBPA radical cation ($1.64 \pm 0.02 \times 10^{-5} \text{ cm}^2/\text{s}$) is very close to that of the parent mol. ($1.57 \pm 0.03 \times 10^{-5} \text{ cm}^2/\text{s}$).

L13 ANSWER 47 OF 194 CA COPYRIGHT 2001 ACS

AN 126:338200 CA

TI Applications of the channel flow cell for UV-visible spectroelectrochemical studies. The kinetics of dimerization of the methyl viologen radical cation
AU Tam, Kin Yip; Wang, Rui Lin; Lee, Chi Woo; Compton, Richard G.
CS Physical Theoretical Chemistry Laboratory, Oxford University, Oxford, OX1 3QZ, UK
SO Electroanalysis (1997), 9(3), 219-224
AB A channel flow cell specifically designed for UV-visible spectroelectrochem. expts. is described. The performance of the cell was characterized using the oxidn. of N,N,N',N'-tetramethyl-p-phenylenediamine in aq. electrolytes and excellent agreement between theory and expt. was obtained. The technique was applied to study the dimerization rate of Me viologen radical cations. The mechanistic results confirm that the electro-generated Me viologen radical cation dimerizes rapidly in aq. soln. and a previously unknown dimerization rate const. close to 104 M-1s-1 is reported

✓L13 ANSWER 56 OF 194 CA COPYRIGHT 2001 ACS

AN 125:99676 CA
TI UV-VIS spectrometer
IN Saito, Katsuhiko; Fujita, Takeshi
PA Shimadzu Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 08129003 A2 19960521 JP 1994-292298 19941031
AB UV-VIS spectrometer, suited for use in chromatog., comprises a flow cell made from a opaque polymer, the analyzing light passing through a column made in the opaque polymer, wherein the diam. of the column at the incident light side is made smaller than that of the opposite side to reduce inaccuracy in optical measurements, caused by the refraction of the analyzing light in the flow cell.

✓L13 ANSWER 57 OF 194 CA COPYRIGHT 2001 ACS

AN 125:47862 CA
TI Detector for chemical analysis
IN McNaughton, Moyra
PA Cognitive Solutions Ltd., UK
SO PCT Int. Appl., 14 pp.
PI WO 9614569 A2 19960517 WO 1995-GB2604 19951106
PRAI GB 1994-22392 19941105
AB A tri-state detector which may be used for chem. anal. of flowing streams has a flow cell, light source, radiation detector and a microelectrode chem. detector; the radiation detector being, for example, a Fourier Transform UV/visible spectrometer.

(L13) ANSWER 65 OF 194 CA COPYRIGHT 2001 ACS

AN 123:245395 CA
TI Design and application of automated variable-wavelength ultraviolet-visible detector
AU Zhu, Donghong; Zhu, Minghua; He, Guochen; Li, Junhong
CS Dep. Chem., East China Univ. Sci., Tech. Univ., Shanghai, 200237, Peop. Rep. China
SO Fenxi Huaxue (1995), 23(7), 858-61
AB The design and application of automated variable-wavelength UV-visible detector are described. The instrument adopts new technol. elements, such as concave holog. grating, fiber optic beam splitter, and cone flow cell, to fabricate the dual beam optics system. The lamp supply uses novel MOS power transistors. The single chip microcontroller controls each component and provides wavelength setting and wavelength time programming methods of detection. An example of the sepn. and detection of NO2- and Br- proves that sensitivity is increased greatly with the wavelength time programming

method of detection.

L13 ANSWER 68 OF 194 CA COPYRIGHT 2001 ACS

AN 123:73848 CA

TI A Hadamard transform UV absorption detection for high performance liquid chromatography. Part I. Preliminary experiments

AU Brayan, J. G.; Malcolme-Lawes, D. J.; Mew, C. D.; Xie, S.

CS Cent. Res. Anal. Chem. Instrumentation, King's Coll. London, London, WC2R 2LS, UK

SO J. Autom. Chem. (1995), 17(2), 77-82

AB The principles and design of a Hadamard transform UV absorbance detector for liq. chromatog. are outlined, and some spectra of arom. compds. passing through its flow cell are presented. This approach could be valuable in providing a low-cost multi-wavelength detection method for liq. chromatog.

L13 ANSWER 69 OF 194 CA COPYRIGHT 2001 ACS

AN 123:12453 CA

TI Multicomponent process UV spectrometer

AU Rinke, Guenter; Hartig, Christian

CS Kernforschungszentrum Karlsruhe, Karlsruhe, D-76021, Germany

SO Tech. Mess. (1994), 61(5), 204-7

AB A multicomponent instrument with a photodiode array for process control applications of gaseous and liq. streams is described. The spectral region between 200 nm and 350 nm is used, where the absorptances of many compds. are high so that a low limit of detection results. A stable and long-lived xenon flash lamp is used to provide long service intervals. Fast transputer technol. combined with a nonlinear regression algorithm (PLS) enables the spectrometer to distinguish similar spectra online in real time. This instrument is intended, for example, for emission control.

L13 ANSWER 73 OF 194 CA COPYRIGHT 2001 ACS

AN 122:58521 CA

TI Spectroscopic measurements in opaque solutions: UV-Vis spectroscopy on process liquors in the paper and pulp industries

AU Danielsson, Lars-Goeran; Sheng, Chai Xin

CS Swedish Center for Process Analytical Chemistry, Division of Analytical Chemistry, Royal Institute of Technology, S-100 44, Stockholm, Swed.

SO Process Control Qual. (1994), 6(2-3), 149-57

AB Initial attempts at using an attenuated total reflection probe for measurements in process liquors of the kraft pulp and paper industries are discussed. In white liquor, sulfides and polysulfides were the only species giving appreciable absorption. The probe could be used for sulfide concns. ≤ 1 M. The range of applicability was influenced by the total solute concn. through its effect on the refractive index of the soln. The absorption was related to concn. in a non-traditional way, but this was largely overcome by the use of multivariate calibration methods. The black liquor resulting from the cook contained large amts. of highly absorbing org. compds., esp. lignin. Using synthetic solns., a successful calibration model for sulfides, lignin, and total solute content was constructed. Before long-time use of the probe in highly alk. media can be recommended, a protection for the end mirror must be included.

L13 ANSWER 75 OF 194 CA COPYRIGHT 2001 ACS

AN 121:266367 CA

TI Channel Flow Cell For UV/Visible Spectroelectrochemistry

AU Wang, Zhenghao; Zhao, Ming; Scherson, Daniel A.

CS Department of Chemistry, Case Western Reserve University, Cleveland, OH, 44106, USA

SO Anal. Chem. (1994), 66(24), 4560-3
AB A channel-type spectroelectrochem. cell was designed and constructed for conducting in situ transmission UV/visible spectroscopic measurements of soln. phase electrogenerated species. Excellent agreement between theory and expt. was obtained using the oxidn. of ferrocyanide in aq. electrolytes as a probe system. In particular, plots of the (relative) absorbance of the soln. at 420 nm (the absorption max. of ferricyanide in the visible region) measured along the axis normal to the fluid flow downstream from the electrode edge, vs. $V^{-1/3}$, where V is the flow rate, yielded a straight line with a close to zero intercept. Also, a linear relation was also found between the diffusion-limited current and $V^{1/3}$, as expected from hydrodynamic and electrochem. considerations.

L13 ANSWER 79 OF 194 CA COPYRIGHT 2001 ACS
AN 121:134955 CA
TI UV attenuated total internal reflection spectroscopic study of topochemical processes of synthesis and degradation of polyimides
AU Mel'nikova, N. B.; Kuz'min, A. V.; Kochneva, E. G.
CS Nizhegorod. Tekh. Univ., Nizhniy Novogorod, Russia
SO Zh. Prikl. Khim. (S.-Peterburg) (1993), 66(9), 2080-5
AB The possibility of the use of UV reflection spectrometric technique with photometric sphere for the study of thermal cyclodehydration of polyamic acid to polyimide, as well as surface modification of polyimide films (for the purpose of subsequent metalization) in various media is shown. NaOH and KOH solns. in iso-PrOH and water, KI mixts. with HCl, and CuI mixts. with KI and HCl were used as modifying agents.

✓L13 ANSWER 86 OF 194 CA COPYRIGHT 2001 ACS
AN 120:79741 CA
TI Spectrometric method for determining the concentration of sulfide in liquors and smelt solutions
IN Holmqvist, Richard; Joensson, Torbjorn
PA STFI, Swed.
SO PCT Int. Appl., 14 pp.
PI WO 9314390 A1 19930722 WO 1992-SE850 19921209
PRAI SE 1992-49 19920109
AB The title method is based on the measurement of light absorption of the sulfide in UV-range between 200-250 nm which differs from that of sulfate, thiosulfate, sulfite and carbonate which can be measured in the IR range. The method does not require a chem. reaction step such as that of common colorimetry method.

L13 ANSWER 93 OF 194 CA COPYRIGHT 2001 ACS
AN 118:149657 CA
TI Delignification with nitric acid
AU Gorbunova, O. F.; Bogolitsyna, G. M.; Kochergina, G. G.
CS Arkhangel. Lesotekh. Inst., USSR
SO Izv. Vyssh. Uchebn. Zaved., Lesn. Zh. (1991), (3), 89-95
AB The pulping of birchwood and sprucewood at 80-85° with aq. HNO₃ (concn. 50-90 g/L), followed by washing with 5-12% aq. NH₄OH gave pulps in 45.5-54.4% yield. The residual lignin content in pulps was 0.5-3.6%, depending on the pulping conditions. Polarog., UV spectroscopy, and gel chromatog. was used to chem. characterize the pulps and pulping and washing liquors.

L13 ANSWER 96 OF 194 CA COPYRIGHT 2001 ACS
AN 117:157534 CA
TI Bropirimine formulation: the dynamic testing of injections
AU Irwin, W. J.; Iqbal, M.

CS Pharm. Sci. Inst., Aston Univ., Aston Triangle/Birmingham, B4 7ET, UK
SO Int. J. Pharm. (1992), 83(1-3), 241-9
AB A flow system for the dynamic testing of injection formulations of bropir-
imine (I) has been developed. This system is based upon that reported by
Yalkowsky and co-workers (1983) where a parenteral formulation is injected
into an infusion fluid of 5% dextrose which is being pumped through the
flow cell of an UV spectrophotometer. Pptn. is indicated by the appearance
of an apparent absorbance due to dispersion of the incident beam by part-
icles. This system worked well for test injections of diazepam in which
soly. is enhanced with cosolvents. Phenytoin injection also provided a
ppt. although both cosolvent and pH control are used to maintain soln. in
this case. In contrast, I injections, which also use both cosolvent and pH
control, exhibited no pptn. When the pH of the mixed effluent was monitor-
ed it was found to be very high, sufficient to maintain I in soln. The
infusion fluid thus did not provide sufficient buffering capacity to mimic
the in vivo situation. When an infusion fluid with a buffer capacity
similar to that of human blood was chosen, pH control was affected and
pptn. could then be used to assess the efficiency of the injection
formulation.

L13 ANSWER 102 OF 194 CA COPYRIGHT 2001 ACS

AN 113:240144 CA

TI Analysis of corrosion behavior of mild steels in various hydroxy acid
solutions by new methods of surface analyses and electrochemical
measurements

AU Sekine, I.; Hayakawa, T.; Negishi, T.; Yuasa, M.

CS Fac. Sci. Technol., Sci. Univ. Tokyo, Noda, 278, Japan

SO J. Electrochem. Soc. (1990), 137(10), 3029-33

AB Corrosion behavior of mild steel in various hydroxy acid solns. of glyco-
lic, lactic, malic, tartaric, and citric acids was investigated by corros-
ion tests, electrochem. measurements, soln. anal., and new methods of sur-
face analyses. The corrosion rates of mild steel decreased in the order of
malic (ca. 3000 mg/dm²/d at 30 wt. percent (w/o) of acid concn.) > tartaric
> lactic > citric > glycolic acids. The corrosion rate of mild steel in
aq. malic, tartaric, lactic, and citric acid solns. increased with increas-
ing acid concn. (0-30 w/o), but in glycolic acid soln. the corrosion rate
was kept const. in such a concn. range. The degree of complex formation
between iron ion and malic acid was found to be superior to that between
iron ion and glycolic acid as detected using UV and visible (UV-vis)
absorption spectroscopy. In the scanning tunneling microscopy (STM) images
and SEM photographs, the surface of the mild steel corroded in malic acid
was microscopically uneven under this condition. The degree of unevenness
was accelerated with increasing immersion time, but the surface in glycolic
acid was even. Applying bias voltages in the range of 0.5-2.0 V, the STM
image in malic acid held const., but in glycolic acid it was shifted with
bias voltage and a step structure was also obsd. in the STM image. A
carboxylic anion (COO-) peak was not obsd. for the steel sample in malic
acid using the attenuated total reflection spectroscopy technique, in
glycolic acid a peak for carboxylic anion was obsd., which was also
confirmed by XPS. In malic, tartaric, lactic, and citric acids, the
corrosion behavior is not ascribed to the passivation but to the active
dissoln. of metal. In glycolic acid, the mols. of glycolic acid are
adsorbed on the steel surface. The corrosion rate in glycolic acid was
found to be const. at a low rate, independent of acid concn.

L13 ANSWER 106 OF 194 CA COPYRIGHT 2001 ACS

AN 113:108467 CA

TI Fiber optic absorbance and fluorescence measurements in high-temperature

liquid chromatography

AU Synovec, Robert E.; Renn, Curtiss N.; Moore, Leslie K.
CS Cent. Process Anal. Chem., Univ. Washington, Seattle, WA, 98195, USA
SO Proc. SPIE-Int. Soc. Opt. Eng. (1990), 1172 (Chem. Biochem. Environ. Fiber
Sens.), 49-59
AB Chem. sensing in high temp. liq. chromatog. (HT-LC) is a difficult task. In
this setting, detection must be performed directly following the sepn., at
the column temp., and at suitable back pressure, to preserve chem. inform-
ation encoded by the chromatog. sepn. A z-configuration flow cell with
"in-situ" fiber-optic monitoring of both absorbance and fluorescence was
developed and examd. for HT-LC (ambient to 150°). The fiber optic-based
measurements circumvent problems and limitations assocd. with using com.
available instrumentation that does not function properly in the high temp.
environment. Solarization of the fiber optic in the UV range was evaluat-
ed, and precautions emphasized. Refractive-index dependencies and aberrat-
ions assocd. with making an absorbance measurement with a single fiber
optic were examd. and minimized by a unique detection approach using a
position sensitive detector. Intensity fluctuations of the mercury-xenon
lamp, initially more than 0.1%, were reduced with the absorbance detector,
leading to a 1×10^{-4} au detection limit ($3 \times$ rms noise level). Fluores-
cence quenching was also considered. The described system was applied to
polycyclic arom. hydrocarbons.

L13 ANSWER 108 OF 194 CA COPYRIGHT 2001 ACS

AN 113:70383 CA

TI ATR-spectroscopy for UV/VIS analytical product control

AU Schlemmer, Harry; Katzer, Josef

CS Carl Zeiss, Oberkochen, D-7082, Fed. Rep. Ger.

SO GIT Fachz. Lab. (1990), 34(3), 257-8, 261-3

AB A concept for attenuated total reflection (ATR-) spectroscopy is presented
featuring an ATR-probe, which is connected via flexible fiber optics to a
compact, fast measuring diode array spectrometer. Using this equipment
direct measurements of strongly absorbing samples (e.g. absorbance 3000)
can be performed without diln. For the employed probes quant. data are
given for the optimal range of absorbance from which a relation to
absorption spectrometry can be drawn. Furthermore, it is shown, that the
figures of absorbance, detd. by the ATR-method, depend linearly on concn.
over a wide range of measurement. A reproducibility of 0.1% is achievable
and the speed of measurement is ≤ 100 spectra/s.

L13 ANSWER 109 OF 194 CA COPYRIGHT 2001 ACS

AN 112:131591 CA

TI Single optical fiber, position-sensitive detector-based multiwavelength
absorbance spectrophotometer

AU Renn, Curtiss N.; Synovec, Robert E.

CS Cent. Process Anal. Chem., Univ. Washington, Seattle, WA, 98195, USA

SO Anal. Chem. (1990), 62(6), 558-64

AB A relatively simple, yet stable and versatile, multiwavelength absorbance
spectrophotometer is described. A broad-band mercury-xenon source was
coupled to a single UV-visible transmitting optical fiber, through a
detection cell, and dispersed by a monochromator onto the face of a
continuous position-sensitive detector (PSD). Two wavelength regions
illuminated opposite ends of the PSD while the remainder of the dispersed
light was masked. Photocurrent contributions by the two wavelength regions
were readily balanced to achieve a stable electronic null condition. The
resulting optical configuration provided absorbance measurements
simultaneously at two wavelengths, while also correcting for light source
intensity fluctuations and refractive index aberrations. The absorbance

detector was applied in microbore liq. chromatog. with a 6-mm path length z-configuration flow cell (1.2 μ L vol.). A 1.1×10^{-4} au (3 \times root mean square noise level, 60-s intervals) was routinely achieved, indicating a significant redn. in noise due to light source fluctuations. Mixts. of aldehyde derivs. with 2,4-dinitrophenylhydrazine were chromatog. analyzed as test systems. The mass detection limit of injected formaldehydes was 4 pg. Since two wavelength regions are simultaneously measured, molar absorptivity ratios of the aldehyde derivs. were obtained and compared to absorbance spectra obtained from a com. instrument. Results suggest that molar absorptivity measurements can be obtained more simply than with the typical photodiode array based instruments. The new detection system should be advantageous in remote-sensing applications, including flow-injection anal., high-temp. liq. chromatog., biol. monitoring, and environmental monitoring.

L13 ANSWER 110 OF 194 CA COPYRIGHT 2001 ACS

AN 112:131587 CA

TI Instrumental developments in micellar electrokinetic capillary chromatography

AU Sepaniak, Michael J.; Swaile, David F.; Powell, A. Craig

CS Dep. Chem., Univ. Tennessee, Knoxville, TN, 37996-1600, USA

SO J. Chromatogr. (1989), 480, 185-96

AB Two instrumental developments in micellar electrokinetic capillary chromatog. are reported. A solvent delivery system capable of generating continuous linear-, concave-, and convex-shaped solvent gradients has a dramatic effect on the chromatog. profiles obtained in the sepn. of a mixt. of fluorescently-labeled n-alkylamines. A versatile on-column flow cell that employs a unique laser-etched, on-column optical slit is described. This flow cell is adapted for photometric detection using a modified UV absorbance detector and spectrophotometric detection using a photodiode array detector.

L13 ANSWER 117 OF 194 CA COPYRIGHT 2001 ACS

AN 109:94955 CA

TI Catalysis of the phototransformation of cellulose with a base

AU Menendez Tomashevich, M.; Margolin, A. L.

CS Inst. Khim. Fiz., Moscow, USSR

SO Vysokomol. Soedin., Ser. A (1988), 30(6), 1322-7

AB UV spectrophotometric study showed that the rate of phototransformation of cellulose (I) samples of different origin [cellophane, purified I sepd. from sulfate pulp] and cellobiose (as model compd. for I) irradiated by UV light in air increased significantly in the presence of NaOH, NaHCO₃, or Na₂CO₃. Treatment of the samples with the base prior to UV irradiation was more effective than treatment of the samples with the base after UV irradiation. However, the UV spectra of irradiated samples obtained in the presence and in the absence of the base were comparable, and addition of the base did not affect significantly the amt. of free radicals formed in the samples during irradiation. The proposed mechanism of phototransformations in I encompasses formation of radicals and intermediate products (such as hydroxyketones) leading to formation of products with polyconjugated bonds. The study is of interest with respect to yellowing of cellulosic materials.

L13 ANSWER 121 OF 194 CA COPYRIGHT 2001 ACS

AN 108:123853 CA

TI ATR technique for UV/visible analytical measurements

AU Schlemmer, Harry; Katzer, Josef

CS Cent. Res. Div., Carl Zeiss, Oberkochen, D-7082, Fed. Rep. Ger.

SO Fresenius' Z. Anal. Chem. (1987), 329(4), 435-9

AB An attenuated total reflection (ATR) technique is presented for UV/visible anal. measurements featuring a solid glass ATR probe which is connected to a fast diode array spectrometer via optical fibers. Samples with very high absorption, which are of some practical interest in process and quality control in chem. and pharmacy, can be directly investigated with an overall reproducibility of 0.1% in concn.

L13 ANSWER 123 OF 194 CA COPYRIGHT 2001 ACS

AN 108:34049 CA

TI A simple device for automated spectrophotometric kinetics using a diode array spectrophotometer

AU Scopes, Robert K.; Holmquist, Barton

CS Cent. Biochem. Biophys. Sci. Med., Harvard Med. Sch., Boston, MA, 02115, USA

SO Anal. Biochem. (1987), 165(2), 258-68

AB An automated system is described that rapidly and automatically mixes reagents and records results, such as spectrophotometric changes. It employs a com. diode array spectrophotometer and a novel diln. chamber in a flow stream that allows repetitive spectrophotometric rate measurements at accurately measured incremental substrate concns. When applied to enzymic kinetic studies, initial velocities at 15 different substrate or inhibitor concns., or pH values, can be recorded in a few minutes with high reproducibility, i.e., std. deviations <1%, and high sensitivity. Reactions occur in an 8 μ L flow cell and the reagent consumption is minimal. The concns. of incrementally dild. reagent in the cell is measured directly by an indicator dye added to the substrate. Michaelis-Menten parameters, K_i values, and pH profiles are detd. for several enzymes including dehydrogenases producing NADH, a kinase requiring a coupled assay, and a hydrolase, carboxypeptidase A, in a reaction that produces a small decrease in absorbance.

L13 ANSWER 125 OF 194 CA COPYRIGHT 2001 ACS

AN 107:146529 CA

TI Remote sensing fiber optic probe NIR spectroscopy coupled with chemometric data treatment

AU Weyer, L. G.; Becker, K. J.; Leach, H. B.

CS Res. Cent., Hercules Inc., Wilmington, DE, 19894, USA

SO Appl. Spectrosc. (1987), 41(5), 786-90

AB A near-IR (NIR) fiber optic probe remote sensing spectroscopic system was developed for online multicomponent compn. anal. The Guided Wave Model 200 UV-VIS-NIR spectrophotometer was evaluated as the base of this system. Multiple linear regression (MLR) software was combined with data transfer, graphics, and online monitoring programs. The system was evaluated in plant trials to monitor the compn. of mixed alc. purifn. streams, mixed solvent distillate, and a fatty acid deriv. The combined use of deriv. spectroscopy and MLR data treatment provided good prediction equations for the real-time (20 s) monitoring of the concns. of several components in moving streams.

L13 ANSWER 137 OF 194 CA COPYRIGHT 2001 ACS

AN 103:197840 CA

TI Multichannel spectrophotometric detector for fused-silica capillary tube isotachopheresis

AU Goto, Masashi; Irino, Katsutoshi; Ishii, Daido

CS Res. Cent. Resour. Energy Conserv., Nagoya Univ., Nagoya, 464, Japan

SO J. Chromatogr. (1985), 346, 167-76

AB Isotachopheresis carried out in a 0.25-mm inside diam., fused-SiD₂, capillary tube yielded high resolu. The use of an UV-visible multichannel

spectrophotometer with photodiode array as detector together with a cross flow cell (vol. 0.01 μ L) was investigated. The system enables excellent resolu. of org. acids and nucleotides, and was applied to microspectrophotometric identification of Fe(II)-o-phenanthroline complex.

L13 ANSWER 139 OF 194 CA COPYRIGHT 2001 ACS

AN 103:80992 CA

TI High-performance ultraviolet absorption detector for liquid chromatography.
I. Preliminary experiments

AU Jones, Kevin; Malcolme-Lawes, David J.

CS Chem. Dep., King's Coll. London, London, WC2, UK

SO J. Chromatogr. (1985), 329(1), 25-32

AB A novel UV absorption detector for high-performance liq. chromatog. is described. The system is based on the UV luminescence of crystals stimulated by energetic electrons, and has the interesting property of exceptionally low noise levels, allowing single-beam operation. A simple exptl. flow cell is described and a no. of example chromatograms recorded at 215 and 254 nm are presented.

L13 ANSWER 143 OF 194 CA COPYRIGHT 2001 ACS

AN 102:81308 CA

TI Multichannel detectors for micro high-performance liquid chromatography:
examination of flow cell structures

AU Ishii, Daido; Goto, Masashi; Takeuchi, Toyohide

CS Fac. Eng., Nagoya Univ., Nagoya, 464, Japan

SO J. Chromatogr. (1984), 316, 441-9

AB The use of a UV-visible multichannel spectrophotometer with a photodiode array in micro high-performance liq. chromatog. was investigated. Parallel and cross flow cells for a multichannel detector were prepd. and their characteristics were examd. The geometry of the parallel flow cell provided a relatively long optical path length, leading to a higher sensitivity of detection. The cross flow cell permitted the use of narrow-bore columns with minimal extra-column band broadening. The system was applicable to the sepn. of antioxidants in gasoline.

✓L13 ANSWER 154 OF 194 CA COPYRIGHT 2001 ACS

AN 93:3433 CA

TI Determination of the concentration of biological substances in
multicomponent systems using internal total reflection in the UV and
visible spectral ranges

IN Mueller, Gerhard

PA Fed. Rep. Ger.

SO Ger. Offen., 12 pp.

PI DE 2837769 A1 19800306 DE 1978-2837769 19780830

PRAI DE 1978-2837769 19780830

AB A glass plate is coated with a very thin layer of a highly refractive liq. such as the immersion oils Br₄(CH)₂ and C₁₀H₇Br, polyvinylcarbazole or other polymer, a resin, etc., or with a solid polymer on which a layer of ZnS, TiO₂, etc. may be deposited. A sample of lower refraction is placed on the exchangeable coating, and UV on visible light is admitted to the sample through the glass and the coating. The attenuated total reflection in the sample alters the spectral compn. of the incident light which is recorded as a change in the absorption spectrum.

L13 ANSWER 158 OF 194 CA COPYRIGHT 2001 ACS

AN 91:116609 CA

TI Multiwavelength detection for liquid chromatography with a repeat-scanning ultraviolet-visible spectrophotometer

AU Saitoh, Koichi; Suzuki, Nobuo
CS Fac. Sci., Tohoku Univ., Sendai, 980, Japan
SO Anal. Chem. (1979), 51(11), 1683-7
AB A repeat-scanning spectrophotometer was designed to scan the 200-800 nm spectral range in 375 ms with a repetition rate of 2 Hz, or in 750 ms with a repetition rate of 1 Hz. The flow cell used for the chromatog. expt. had a sample path of 10 mm and a vol. of 8 μ L. The spectrophotometer was interfaced to a small computer to perform multiwavelength detection. The simultaneous recording of chromatograms at different monitoring wavelengths, and instantaneous recording of absorption spectra were performed. The capability of multiwavelength detection was demonstrated with an expt. on the gel chromatog. of benzoylacetone and its Be(II) and Cr(III) chelates.

✓L13 ANSWER 160 OF 194 CA COPYRIGHT 2001 ACS

AN 90:99669 CA
TI Sample changing chemical analysis method and apparatus
IN Hanson, William A.; Barr, Graham S. S.
PA Hanson Research Corp., USA
SO U.S., 19 pp.
PI US 4108602 A 19780822 US 1976-734089 19761020
AB An automated sample changing chem. anal. system for sequentially analyzing a series of samples such as pharmaceutical chem. samples is described, the system being particularly useful for dissoln. rate testing. A pressure/vacuum source provides motivation for withdrawing each sample from its resp. source in sequence through a sample selector valve and transporting the sample to the flow cell of a chem. analyzer such as an UV spectrometer, and then returning all or part of the sample to its source through the same selector valve and purging the flow cell and conduits back to the sample source. In 1 form each sample is simply drawn by vacuum from its source through the selector valve into the flow cell and then the entire sample is returned after anal., by air pressure, back through the selector valve to the source, whereas in another form a diluent or reagent is mixed with the sample in an intermediate step to bring the sample within the testing range of the analyzer. Novel microporous filter stop means are employed to protect the pressure/vacuum source from system liqs., to measure accurately a quantity of diluent or reagent to be mixed with the sample, and to minimize bubbles in the system.

L13 ANSWER 170 OF 194 CA COPYRIGHT 2001 ACS

AN 86:37296 CA
TI Rapid scanning diode array as a multi-wavelength detector in liquid chromatography
AU Milano, M. J.; Lam, S.; Grushka, Eli
CS Dep. Chem., State Univ. New York, Buffalo, N. Y., USA
SO J. Chromatogr. (1976), 125(1), 315-26
AB A new diode array detector for liq. chromatog. is described. The low-vol. flow cell of the detector and the real time signal averaging of the spectra allow operation at 0.005 a.u.f.s. (absorbance unit full scale) with noise levels of 0.0005 a.u. peak to peak. Since the detection is done over a large range of wavelengths, the detector allows identification of various solutes and peak deconvolution. The 1st deriv. spectra can be gainfully utilized in a unique way to maximize the information obtained from the detector. The detector was illustrated by the liq. chromatog. of a mixt. of C₆H₆, benzyl chloride, and anisole.

L13 ANSWER 172 OF 194 CA COPYRIGHT 2001 ACS

AN 85:187316 CA

TI New mini-computer automated linear photodiode array spectrometer system for high-resolution liquid chromatography
AU Dessy, R. E.; Reynolds, W. D.; Nunn, W. G.; Titus, C. A.; Moler, G. F.
CS Dep. Chem., Virginia Polytech. Inst., Blacksburg, Va., USA
SO J. Chromatogr. (1976), 126, 347-68
AB A 3 generation multi-wavelength array spectrometer was developed as a detector for the high-resoln. liq. chromatog. characterization of metabolites. The design features include a PDP-8/e mini-computer, a matched pair of linear photodiode (256 element) arrays (Reticon), holographically ruled gratings, fiber optics, flow cells, and a high-intensity xenon light source. The wavelength range is 256 nm differential with 1 nm resoln. and can be independently adjusted in the spectral range of 200-800 nm. Correction for the quantum efficiency curve is made on both of the cooled (-30°) photodiode arrays by an assembly language subroutine. The system is capable of 20 spectra/sec (200-456 nm) in a dual-beam mode. The dynamic range and linearity of the photodiode arrays are approximately 4000:1. Special features include mini-computer driven signal enhancement via integration as a function of signal strength. The display output includes presentation of the total absorption chromatogram vs. elution time in both real and post-run time as well as selectable single absorption band (e.g., 280 nm) vs. elution time (post-run time). Application of this dedicated mini-computer automated liq. chromatog.-uv spectrometry system for the sepn. and characterization of the metabolites of a carcinogen, 4-ethylsulfonyl-1-naphthalenesulfonamide, will be discussed.

✓L13 ANSWER 176 OF 194 CA COPYRIGHT 2001 ACS

AN 81:171943 CA

TI Apparatus for determining the rate of solution

IN Bischoff, Dennis E.; Skiles, David W.; Brooker, Robert M.

PA Dow Chemical Co.

SO Ger. Offen., 19 pp.

PI DE 2403188 A1 19740801 DE 1974-2403188 19740123

US 3802272 A 19740409 US 1973-326428 19730124

PRAI US 1973-326428 19730124

AB An app. for detg. the rate of soln. of a solid in a liq. has a no. of covered, temp.-controlled soln. chambers, e.g., 6; an automatic analyzer to det. the amt. of dissolved solid; selectors with valves, piping, and a pump for automatically and sequentially directing liq. from and back to each chamber through the analyzer and for automatic backflushing with air; and circuitry for automatic, timed-sequence control. The analyzer includes a spectrophotometer with an uv light source and flow cell. Each chamber has a filter and comprises a pot with a stirred wire mesh basket contg. solid sample immersed in the test liq. plus inlet and outlet tubes.

L13 ANSWER 184 OF 194 CA COPYRIGHT 2001 ACS

AN 75:130927 CA

TI Spectroscopic investigation of delignification in the early stages of kraft bleaching

AU Mallett, S. E.

CS Canadian Ind. Ltd., McMasterville, Que., Can.

SO Pulp Pap. Mag. Can. (1971), 72(2), T65-T74

AB The solubilization and delignification occurring during the 1st 2 stages of a kraft bleaching sequence involving chlorination/ NaOH extn. and ClO₂/NaOH extn partial sequences were quant. studied by uv spectroscopy. Chlorination of low kappa no. kraft pulp removed only minor quantities of lignin, and at most levels of application, an increase in the wt. of the undissolved lignin occurred. The effectiveness of delignification increased markedly at levels of Cl application >75% of the Cl demand. The

amt. of lignin present in the pulp did not change drastically after treatment with ClO₂. On both partial sequences most of the delignification occurred during the extn. stage.

=> log y

STN INTERNATIONAL LOGOFF AT 20:01:20 ON 10 SEP 2001

=> d his

(FILE 'HOME' ENTERED AT 07:59:23 ON 11 SEP 2001)

FILE 'REGISTRY' ENTERED AT 07:59:32 ON 11 SEP 2001

E SODIUM OXIDE/CN

L1 1 S DISODIUM OXIDE /CN

L2 3 S (SODIUM HYDROXIDE OR SODIUM CARBONATE OR SODIUM BICARBONATE)/CN

L3 3 S (SODIUM SULFIDE OR SODIUM HYDROGEN SULFIDE OR POTASSIUM
HYDROXIDE)/CN

SEL NAME L1

SEL NAME L2

SEL NAME L3

FILE 'CA' ENTERED AT 08:07:16 ON 11 SEP 2001

L4 170179 S L1-3 OR E1-80

L5 695091 S NA₂O OR EFFECTIVE ALKALI? OR NaOH OR Na₂CO₃ OR NaHCO₃ OR NaHS OR
Na₂S OR NASH OR SULFIDITY OR SULFIDE OR CO₃²⁻ OR HCO₃⁻

L6 936219 S HYDROXIDE OR CARBONATE OR BICARBONATE OR KOH OR S₂ OR HS OR SH OR OH

L7 74460 S L4-6(5A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR QUANTIF? OR
QUANTITAT? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR TEST? OR
SENSE# OR SENSING OR SENSOR OR PROBE# OR PROBING)

L8 2821 S L7 AND(ULTRAVIOLET OR ULTRA VIOLET)

L9 591 S L7 AND(ULTRAVIOLET OR ULTRA VIOLET) (5A) (SPECTRO? OR PHOTOMET?)

L10 72 S L7 AND(ULTRAVIOLET OR ULTRA VIOLET) (3A) (FAR OR VACUUM)

L11 22 S L10 AND (KINETIC OR ANION)

L12 4 S L9 AND(FIBER OR FIBRE) (1A)OPTIC?

L13 131 S L9 AND(ANION OR ION)

L14 8756 S (SODIUM HYDROXIDE OR SODIUM CARBONATE OR SODIUM BICARBONATE)/TI

L15 3206 S (SODIUM SULFIDE OR SODIUM HYDROGEN SULFIDE OR POTASSIUM
HYDROXIDE)/TI

L16 2178 S (SODIUM OR DISODIUM) (W) OXIDE/TI

L17 86437 S (HYDROXIDE OR CARBONATE OR BICARBONATE OR KOH OR S₂ OR HS OR SH OR
OH)/TI

L18 88885 S (NA₂O OR EFFECTIVE ALKALI? OR NaOH OR Na₂CO₃ OR NaHCO₃ OR NaHS OR
Na₂S OR NASH OR SULFIDITY OR SULFIDE OR CO₃²⁻ OR HCO₃⁻)/TI

L19 164 S L9 AND((ANION OR ION OR ANIONIC OR IONIC)/TI OR L14-18)

L20 1684 S L7 AND(PAPERMAKING OR KRAFT OR LIQUOR OR PAPER MAKING OR(PROCESS OR
QUALITY OR PRODUCT) (1A) (STREAM OR CONTROL?))

L21 100 S L13 NOT CHROMATOG?

L22 62 S L21 AND(LIQUID OR SOLUTION OR FLUID OR AQUEOUS OR DIRECT OR LIQUOR)

L23 414 S L20 AND((ANION OR ION OR ANIONIC OR IONIC)/TI OR L14-18)

L24 18 S L8 AND L23

L25 396 S L23 NOT L24

L26 12 S L25 AND(IR OR NIR)

L27 244 S L11-12,L19,L22,L24,L26

L28 226 S (L27 NOT PY>1999)OR(L27 AND PATENT/DT)

=> d 128 bib,ab 1-226

✓L28 ANSWER 4 OF 226 CA COPYRIGHT 2001 ACS

AN 132:219201 CA

TI Multi parameter scanner for measuring quantities of biological samples

IN Heffelfinger, David M.; Batterson, Rebecca Ann; Salgado, Renato
PA Bio-Rad Laboratories, Inc., USA
SO U.S., 18 pp.
PI US 6043506 A 20000328 US 1997-1254 19971230
PRAI US 1997-55567 19970813

AB An app. capable of measuring quantities of biol. or other types of samples that have been labeled using any of a variety of techniques including fluorescence, radioisotopes, enzyme activated light emitting chems., and enzyme activated fluorescent materials is provided. The app. allows for either simultaneous or sequential acquisition of signals from multiple sample types. The app. is not restricted to a particular source or wavelength of excitation or readout light, nor is the app. restricted to a particular emission wavelength. The provided scanner includes a source module that preferably contains an internal laser emitting two different wavelengths of approx. the same intensity. An optional external light source may be coupled to the source module, thus adding further flexibility through the addn. of other wavelengths (e.g., V, visible, mid-IR, and IR). The scanner also includes a detection module. Within the detection module are two detectors, thus allowing the simultaneous detection of multiple wavelengths. A bifurcated optical cable is used to transfer the excitation and/or readout light from the source module to the sample and subsequently transfer the emitted and/or scattered light from the sample to the detection module. The scanning stage of the scanner is designed to accommodate a variety of samples, ranging from phosphor screens, gels, and fluorescent samples to microtiter plates. An internal microprocessor is used to control the various aspects of the scanner, preferably including translation stage control, source filters, and detection filters. The internal microprocessor may be coupled to an external computer. The external computer may be used to change the programming of the microprocessor, provide a user interface to the microprocessor, process and store test results, and display sample images.

L28 ANSWER 29 OF 226 CA COPYRIGHT 2001 ACS

AN 128:245357 CA

TI Determination of phenols, inorganic anions, and carboxylic acids in Kraft black liquors by capillary electrophoresis

AU Volgger, Dietmar; Zemann, Andreas; Bonn, Guenther

CS Institute Analytical Chemistry Radiochemistry, Leopold-Franzens-University, Innsbruck, A-6020, Austria

SO J. High Resolut. Chromatogr. (1998), 21(1), 3-10

AB Two methods are presented for the quant. capillary electrophoretic (CE) detn. of phenolic lignin degrdn. compds. as well as of inorg. anions and org. acids in Kraft black liquors. Important phenolic lignin degrdn. compds. can be rapidly sepd. by co-electroosmotic CE after acidification of the liquors and subsequent extn. of the compds. with chloroform. A capillary electrophoretic sepn. of phenolic compds. is performed by using a phosphate/borate electrolyte system and UV detection at 214 nm. In addn., a HPLC method using a gradient with water, methanol, and acetic acid is also developed. Inorg. ions which are of importance to the pulping process can be detd. by simply dilg. the black liquors after sampling and subsequent anal. with a chromate electrolyte system and indirect UV detection at 185 nm. In addn., the concn. of low mol. aliph. carboxylic acids can be detd. simultaneously within the same run. By method optimization it is possible to sep. the anions within 1 min and, at the same time, to increase the resoln. of the solutes. The electrolyte systems for the CE sepns. were optimized by varying the pH value and by adding org. solvents. Short sepn. times are obtained by adding a polycationic EOF modifier (hexadimethrine bromide) to the electrolyte which reverses the

electroosmotic flow. A migration of the anionic analytes in the same direction as the electroosmotic flow is thus established.

L28 ANSWER 41 OF 226 CA COPYRIGHT 2001 ACS
AN 127:78070 CA
TI Direct determination of hydrogen-carbonate ion in the presence of carbonate ion by ultraviolet second-derivative spectrophotometry
AU Kiriyama, Tetsuya
CS Faculty of Education, Kagoshima University, Japan
SO Kagoshima Daigaku Kyoikugakubu Kenkyu Kiyo, Shizen Kagaku Hen (1996), 48, 65-70
AB Detn. of hydrogen-carbonate ion by the title method and the interference of potassium is discussed.

L28 ANSWER 45 OF 226 CA COPYRIGHT 2001 ACS
AN 126:320270 CA
TI A comparison of different analytical approaches to the online measurement of hydrogen sulfide
AU Imbrogno, Frank; Phillips, Scott; Harris, Phil; Adam, Hamish
CS BOVAR Western Research, USA
SO Oper. Sect. Proc. - Am. Gas Assoc. (1996) 274-282
AB H2S occurs naturally in most gas reservoirs. It is both highly toxic and corrosive requiring removing in natural gas processing plants prior to transmission in natural gas pipelines. Typically, H2S concns. in natural gas pipelines must be kept below 5 ppm to 25 ppm. It is imperative to continuously monitor these H2S levels to ensure that processing plants are functioning properly and that regulated levels are not exceeded. A variety of anal. techniques have been employed to measure H2S levels in gas pipelines. These include; lead acetate tape; UV photometry; semiconductor sensors; and others. The performance characteristics of these different techniques are compared. A UV process photometer using hollow cathode lamp sources enables superior performance in terms of linearity, baseline stability, minimal cross-interference, and reliability. The design of a practical H2S analyzer based on this configuration is presented.

✓L28 ANSWER 47 OF 226 CA COPYRIGHT 2001 ACS
AN 126:279204 CA
TI Determination of sodium sulfide and sulfidity in green liquors and smelt solutions
IN Leclerc, Denys F.
PA Pulp and Paper Research Institute of Canada, Can.
SO PCT Int. Appl., 46 pp.
PI WO 9710501 A1 19970320 WO 1996-CA604 19960909
PRAI US 1995-526873 A 19950912
AB A rapid method is provided for the online detn. of Na sulfide concn. and/or percent sulfidity in green liquors or smelt solns. used for the prodn. of either kraft or sulfite pulp. The method includes the steps of withdrawing samples of a smelt soln. or green liquor from the kraft or sulfite manufg. process, exposing the samples to near-IR radiation over a predetd. range of wavelengths, detg. the absorbance shown by different combinations of Na sulfide, NaOH, Na carbonate and NaCl concns., correlating by multivariate calibration the relation between the absorbance measurements of unknown samples and the absorbance shown by different combinations of Na sulfide, NaOH, Na carbonate and NaCl so that the amt. of Na sulfide and/or the percent sulfidity can be accurately detd. for any levels of total titratable alkali or chloride present in the liquor.

L28 ANSWER 54 OF 226 CA COPYRIGHT 2001 ACS

AN 125:61227 CA
TI UV characterization of sulfide-polysulfide solutions and its application
for process monitoring in the electrochemical production of polysulfides
AU Danielsson, L.-G.; Chai, X.-S.; Behm, M.; Renberg, L.
CS Swedish Center Process, Analytical Chem., Royal Inst. Technol., Stockholm,
S-100 44, Swed.
SO J. Pulp Pap. Sci. (1996), 22(6), J187-J191
AB The UV spectral characteristics of some sulfur species of relevance for the
electrochem. prodn. of polysulfides have been studied. It was found that an
isosbestic point exists in the hydrogen sulfide ion-polysulfide soln. The
absorption at this point (249 nm) is proportional to the total sulfur
concn. in the soln. The investigation also shows that the spectrum of a
polysulfide soln. can be regarded simply as the sum of contributions from
charged hydrogen sulfide ion and zero-valent sulfur in polysulfides
although a complicated equil. distribution of different species exists in
the polysulfide soln. The spectrum provides enough information for the
measurement of these forms of sulfur. Based on spectrophotometric
measurements, a simple monitoring for charged hydrogen sulfide ion and
polysulfide excess sulfur in the process liquor for wood pulping can be
realized.

L28 ANSWER 55 OF 226 CA COPYRIGHT 2001 ACS
AN 125:36128 CA
TI Determination of inorganic anions in Kraft pulping liquors by capillary
electrophoresis
AU Masselter, Sonja M.; Zemmann, Andreas J.; Bonn, Gunther K.
CS Inst. Analytical Chem. and Radiochem., Leopold-Franzens-Univ., Innsbruck,
A-6020, Austria
SO J. High Resolut. Chromatogr. (1996), 19(3), 131-6
AB Various S-contg. anions (SO42-, SO32-, S2-, S2O32-) in Kraft pulping
process liquors were detd. by capillary electrophoresis, as well as other
inorg. anions (OH-, Cl-, C2O42-, CO32-). Through optimization of the sepn.
conditions it was possible to simultaneously det. the anionic species in
pulping liquors with direct and indirect UV detection at 185, 214, and 254
nm. To ensure short sepn. times a migration of the anionic analytes in the
same direction as the electroosmotic flow (co-electroosmotic CE) was
established by reversal of the electroosmotic flow with 1,5-dimethyl-1,5-
diazundecamethylene polymethobromide (Polybrene) which was added to the
electrolyte as an EOF modifier. The impact of acetonitrile as an org.
modifier to improve the selectivity of the anionic analytes was also
investigated. The method developed was used to analyze and quantify
various anions in pulping liquors (white and black liquors). By simultan-
eously detg. the OH- concn. it is possible to calc. effective alky. and
sulfidity with the measured concns. without the need of volumetric methods.

L28 ANSWER 60 OF 226 CA COPYRIGHT 2001 ACS
AN 124:218856 CA
TI Determination of inorganic anions in environmental samples by capillary
electrophoresis
AU Takayanagi, Toshio; Wada, Eiko; Oshima, Mitsuko; Motomizu, Shoji
CS Fac. Sci., Okayama Univ., Okayama, 700, Japan
SO Kankyo Seigyo (1995), 17, 49-55
AB Several inorg. anions in environmental H2O samples, such as river, rain,
tap, and waste waters, were detd. by capillary electrophoresis with
indirect photometric UV detection. The use of a polymer coated SiO2
capillary and an anionic org. photometric reagent realized a stable
baseline and short anal. time. Nine kinds of anions, Cl-, Br-, NO3-,
SO42-, C2O42-, ClO4-, F-, HPO42-, and HCO3-, were well sepd. and detected

within 12 min. Calibration graphs for the anions showed a good linearity at 0.4×10^{-4} mol dm⁻³. Detection limits of the anions were 2×10^{-6} mol dm⁻³ (HPO₄²⁻) to 4×10^{-5} mol dm⁻³ (NO₂⁻). Anions in river water (Zasu river) and waste water (Okayama University, North district) were measured over 5 days. The waste water contained various kinds of anions, at high concns. with its large variation, when compared with the river water. The proposed method offers a simple, rapid, and accurate detn. of anions in H₂O samples.

L28 ANSWER 71 OF 226 CA COPYRIGHT 2001 ACS

AN 123:86303 CA

TI Rapid determination of effective alkali and dead-load concentrations in kraft liquors by attenuated total reflectance infrared spectrometry

AU Leclerc, D. F.; Hogikyan, R. M.

CS Paprican, Vancouver, BC, V6S 2L9, Can.

SO J. Pulp Pap. Sci. (1995), 21(7), J231-J237

AB A rapid method for detg. the effective alkali and the inorg. content of kraft process liquors was evaluated. White, black, and green liquor samples were analyzed for effective alkali, carbonate, sulfate, and thio-sulfate concns., with the use of IR measurements obtained from attenuated total reflectance spectra. The obsd. baseline-cor. absorbance for each species correlated directly with its concn. as detd. from std.-method lab. analyses. Effective alkali could be detd. for white, black, and green liquors, with a concn. of ≥ 1 g/L (as Na₂O). Carbonate, sulfate, and thio-sulfate concns. could also be measured in white and green liquors with a concn. of ≥ 2 g/L (as Na₂O). The IR method was faster, more reliable, and simpler than existing lab. methods, and showed promise as an online method for process control.

✓L28 ANSWER 76 OF 226 CA COPYRIGHT 2001 ACS

AN 122:71124 CA

TI Method for separating ionic species using capillary electrophoresis

IN Jones, William R.; Jandik, Petr

PA Millipore Corporation, USA

SO U.S., 24 pp. Cont.-in-part of U.S. 5,156,724.

PI US 5366601 A 19941122 US 1992-963685 19921020

US 5104506 A 19920414 US 1990-471535 19900129

US 5156724 A 19921020 US 1991-642685 19910117

US 5128005 A 19920707 US 1991-796757 19911125

PRAI US 1990-471535 19900129

AB A technique for sepg., identifying and measuring ions in soln. by capillary zone electrophoresis is described, which provides improved sensitivity and resoln. of anionic species. The method involves introducing a sample contg. the ionic species into a narrow bore capillary filled with a carrier electrolyte contg. a selected light-absorbing anion. An elec. potential is applied across the capillary column causing the ions to elute according to their ionic mobility. Both UV absorbing and UV-transparent ions can be detected and quantitated by UV/visible photometric monitoring.

L28 ANSWER 77 OF 226 CA COPYRIGHT 2001 ACS

AN 122:70747 CA

TI Equilibrium, Kinetic, and UV-Spectral Characteristics of Aqueous Bromine Chloride, Bromine, and Chlorine Species

AU Wang, Tian Xiang; Kelley, Mark D.; Cooper, John N.; Beckwith, Richard C.; Margerum, Dale W.

CS Department of Chemistry, Purdue University, West Lafayette, IN, 47907, USA

SO Inorg. Chem. (1994), 33(25), 5872-8

AB Bromine chloride in the presence of chloride ion forms the

dichlorobromate(I) ion, BrCl_2^- , where $K_1 = [\text{BrCl}_2^-]/([\text{BrCl}(\text{aq})][\text{Cl}^-]) = 6.0 \text{ M}^{-1}$. Equil. const. (all at 25.0° , $\mu = 1.00\text{M}$) are also detd. for $K_2 = [\text{Br}_2\text{Cl}^-]/([\text{BrCl}(\text{aq})][\text{Br}^-]) = 1.8 \times 10^4 \text{ M}^{-1}$, for $K_3 = [\text{Br}_2\text{Cl}^-]/([\text{Br}_2(\text{aq})][\text{Cl}^-]) = 1.3 \text{ M}^{-1}$ and for $K_4 = [\text{Br}_3^-]/[\text{Br}_2(\text{aq})][\text{Br}^-] = 16.1 \text{ M}^{-1}$. UV absorption bands are resolved for BrCl_2^- at 232 nm ($\epsilon = 32,700 \text{ M}^{-1} \text{ cm}^{-1}$) and 343 nm ($\epsilon = 312 \text{ M}^{-1} \text{ cm}^{-1}$), for Br_2Cl^- at 245 nm ($\epsilon = 24,900 \text{ M}^{-1} \text{ cm}^{-1}$) and 381 nm ($\epsilon = 288 \text{ M}^{-1} \text{ cm}^{-1}$), and for Br_3^- at 266 nm ($\epsilon = 40,900 \text{ M}^{-1} \text{ cm}^{-1}$). The UV spectral properties of $\text{Cl}_2(\text{aq})$, Cl_3^- , $\text{Br}_2(\text{aq})$, and Br^- are examd. and compared. The reaction between $\text{Cl}_2(\text{aq})$ and Br^- to form BrCl_2^- occurs at the diffusion-controlled limit; the rate const., $(7.7 \pm 1.3) \times 10^9 \text{ M}^{-1} \text{ s}^{-1}$, is measured by the pulsed-accelerated-flow method. The rapid formation of BrCl_2^- can be used as an anal. method for trace bromide ion, where $\geq 10^{-5} \text{ mol } \%$ Br^- can be detected in aq. solns. of HCl or chloride salts.

✓L28 ANSWER 83 OF 226 CA COPYRIGHT 2001 ACS

AN 121:111790 CA

TI Determination and control of effective alkali in kraft liquors by IR spectrometry

IN Leclerc, Denys F.; Hogikyan, Robert M.

PA Pulp and Paper Research Institute of Canada, Can.

SO PCT Int. Appl., 39 pp.

PI WO 9401769 A1 19940120 WO 1993-CA281 19930706

US 5364502 A 19941115 US 1993-124055 19930917

US 5378320 A 19950103 US 1993-124052 19930917

PRAI US 1992-910379 A 19920708

AB A direct monitoring and control method which eliminates frequent sampling and equipment maintenance is provided for online measurement of effective alkali, carbonate, sulfate, and thiosulfate concns. in kraft pulping liquors. The method includes the steps of withdrawing samples of a liquor from the pulping process, subjecting the samples to IR spectrophotometry at predetd. wave nos. to produce peak-absorbance measurements relative to a background spectrum of water, detg. peak absorbance for different alkali concns., correlating relationships between the peak-absorbance measurements of samples with the peak absorbance for different alkali concns. to det. optimum effective alkali concn. in the samples, and controlling ≥ 1 process parameters to obtain the effective alkali concn. of the liquor.

(L28) ANSWER 96 OF 226 CA COPYRIGHT 2001 ACS

AN 119:51587 CA

TI Rapid ion monitoring of kraft process liquors by capillary electrophoresis

AU Salomon, Delmar R.; Romano, J. P.

CS Bovar Eng. Prod., Calgary, AB, T2E 6L5, Can.

SO Process Control Qual. (1992), 3(1-4), 219-27

AB Chem. recovery and liquor regeneration efficiencies in kraft pulping are evaluated by monitoring these ions: chloride, thiosulfate, sulfite, sulfate, sulfide, hydroxide, carbonate, Na^+ , and K^+ . Capillary zone electrophoresis (CZE) is a novel anal. technique that optimizes the sepn. of charged species. The technique is used to det. the important inorg. and org. ions in kraft process streams by UV detection at 254 and 214 nm. The detns. correlate with the kraft process variables, e.g. sulfidity in the white liquor, redn. efficiency of the recovery furnace, and causticization efficiency in the slaker operation. For ease of data processing S speciation is best performed at 185 nm. Results obtained by off-line monitoring of ions found in the white, black, and green liquors from kraft mills are presented. The potential of CZE as a cost-effective method for rapid process monitoring of kraft pulping liquors is suggested.

- L28 ANSWER 97 OF 226 CA COPYRIGHT 2001 ACS
AN 118:240352 CA
TI Determination of sulfide in water and wastewater by ultraviolet spectrophotometry
AU Wang, Lianshe; Zhou, Peng; Zheng, Dimei; Xie, Lianying
CS Xinjiang Environ. Monitor. Cent., Wulumuqi, 830011, Peop. Rep. China
SO Fenxi Huaxue (1993), 21(4), 425-7
AB A gas phase-UV spectrophotometric method to det. S₂- in water and wastewater is simple, accurate, precise, and requires no sample pretreatment. S₂- are converted to H₂S under acidic conditions and detd. as gaseous H₂S at 196 nm absorption.
- L28 ANSWER 102 OF 226 CA COPYRIGHT 2001 ACS
AN 117:51100 CA
TI Applications of capillary ion electrophoresis in the pulp and paper industry
AU Salomon, Delmar R.; Romano, Joe
CS Western Res., Calgary, AB, T2E 6L5, Can.
SO J. Chromatogr. (1992), 602(1-2), 219-25
AB Anions crit. to the performance of the kraft pulping process are presently detd. by wet chem. methods and more recently by ion chromatog. Chem. recovery and liquor regeneration efficiencies are evaluated by monitoring these ions: Cl⁻, S₂O₃²⁻, S₂O₃²⁻, SO₄²⁻, S₂⁻, OH⁻, and CO₃²⁻, Na⁺ and K⁺. Capillary ion electrophoresis is a novel anal. technique that is optimized for the rapid monitoring of charged species. The technique is applied for the first time on kraft process streams using indirect UV detection at 254 nm and 214 nm to monitor the charged species. The results are used to evaluate important process variables such as sulfidity (white liquor), redn. efficiency (recovery furnace performance), and causticization efficiency (slaker performance). Results obtained by off-line monitoring of ions found in the white, black, and green liquors from kraft mills are reported. The potential of capillary ion electrophoresis as a cost effective technique for rapid processing of kraft pulping liquors is suggested.
- L28 ANSWER 106 OF 226 CA COPYRIGHT 2001 ACS
AN 115:222327 CA
TI Ultraviolet-photometric method for determination of hydrogen sulfide in gases and liquids
IN Zech, Christel; Kerger, Michaela; Petrick, Ingolf
PA VEB Gaskombinat Schwarze Pumpe, Fed. Rep. Ger.
SO Ger. (East), 3 pp.
PI DD 286869 A5 19910207 DD 1989-331265 19890731
AB In gases or liqs., H₂S is detd. by absorbing the sample in a NaOH soln. at a certain concn. (pH 7-11), and measuring the UV-absorption of the sample in the range of 210-250 nm against a calibration curve. This detn. is useful for application in the coal industry.
- ✓L28 ANSWER 122 OF 226 CA COPYRIGHT 2001 ACS
AN 109:204094 CA
TI Method for determining essential components of a Stretford gas treating process solution
IN Ellerbe, Laverne W.
PA Dow Chemical Co., USA
SO U.S., 6 pp. Cont.-in-part of U.S. Ser. No. 718,044, abandoned.
PI US 4749656 A 19880607 US 1986-900011 19860825
PRAI US 1985-718044 19850329
AB A method is described for detg. the presence of an amt. of Na vanadate in a soln. contg. it which may also contain Na acid carbonate, Na carbonate, Na

thiosulfate, anthraquinone disulfonic acid, Na sulfate, various acid gases (e.g. H₂S, CO₂, COS and the like) and hydrocarbon liq. and gases such as would be expected in a Stretford gas treating soln. The improvement comprises passing the sample soln. into and through an anion-exchange guard column, then through a brine-sensitive medium capacity (0.05 mequiv/gm) hydrophobic anion-exchange column eluting the columns with a 0.001 M Na₂SO₄/0.0004 M NaOH aq. eluant soln. and detecting the Na vanadate and Na carbonate, Na bicarbonate, Na hydroxide and Na thiosulfate, if present, in a Zn source UV detector and anthraquinone in a Hg source UV 254 nm detector, or D source 190 nm detector, recording the signals(s) from the detector and thereby obtaining relative proportionation of the aforesaid detected compds. in the soln. In this way, the method would give results for all components in about 20 min using a single sample or aliquot.

L28 ANSWER 133 OF 226 CA COPYRIGHT 2001 ACS

AN 106:178307 CA

TI Recent progress in ion chromatographic analysis of pulping liquors: determination of sulfide and sulfate

AU Easty, D. B.; Johnson, J. E.

CS Inst. Pap. Chem., Appleton, WI, 54912, USA

SO Tappi J. (1987), 70(3), 109-11

AB An UV detector was evaluated for use in the ion-chromatog. detn. of sulfide in pulping liquors. Because the UV detector was less sensitive and had a wider range than the amperometric detector, liquors did not need to be dild. as extensively for sulfide measurement. This made sample prepn. easier and reduced oxidative loss of sulfide. Problems in the ion-chromatog. detn. of sulfate in green liquor were investigated and resolved. Sulfate could be detd. accurately in green liquor if the liquor was dild. with deoxygenated distd. water and immediately injected into the ion chromatograph.

L28 ANSWER 143 OF 226 CA COPYRIGHT 2001 ACS

AN 103:109244 CA

TI Photometric analyzer systems for monitoring low levels of hydrogen sulfide

AU Saltzman, R. S.; Dell, C. G.

CS E.I. du Pont de Nemours and Co., Inc., USA

SO ISA Trans. (1985), 24(1), 69-74

AB Two photometric systems for selective H₂S anal. in gas streams by measurement of the UV absorption in the presence of potentially interfering components are described. In one system, a zero ref. gas is provided by selectively removing the H₂S from the sample gas. In the other system, H₂S is extd. with a dil. NH₄OH soln., and the strong UV absorption of the (NH₄)₂S formed in soln. is measured and calibrated for H₂S concn. in the gas stream.

✓L28 ANSWER 157 OF 226 CA COPYRIGHT 2001 ACS

AN 98:218640 CA

TI Method and apparatus for photometrically monitoring low level concentration of hydrogen sulfide in alkanolamine

IN Saltzman, Robert S.

PA du Pont de Nemours, E. I., and Co., USA

SO U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 211,582, abandoned.

PI US 4380586 A 19830419 US 1981-310451 19811013

PRAI US 1980-211582 19801201

AB A method and an app. for photometrically analyzing the H₂S concn. in an absorber stream contg. a 1st predetd. concn. of H₂S-alkanolamine complex and UV-absorbing impurities is characterized by isolating a ref. sample of the stream and removing H₂S until a 2nd lower concn. remains. The ref.

sample is photometrically analyzed to produce a ref. signal with representative UV absorption. The ref. signal is thereafter used in the photometric anal. of a 2nd sample to produce a signal representative only of the H₂S concn. in the 2nd sample.

L28 ANSWER 158 OF 226 CA COPYRIGHT 2001 ACS

AN 98:154418 CA

TI Determination of inorganic anions by ion chromatography with ultraviolet absorbance detection

AU Williams, Richard J.

CS Chem. Res. Lab., Allied Corp., Morristown, NJ, 07960, USA

SO Anal. Chem. (1983), 55(6), 851-4

AB The application of variable-wavelength UV detection in series with the normal cond. detector in ion chromatog. for the detn. of inorg. anions is described. This combination of detectors greatly increases the amt. of information that can be collected on a given sample. The application of UV detection has the following advantages: aid in the identification of unknown peaks; use in resolving overlapping peaks; help in eliminating problems assocd. with the carbonate dip; redn. of problems assocd. with ion exclusion in the suppressor column; ability to detect anions not normally detected by the cond. detector, e.g., sulfide and arsenite.

L28 ANSWER 178 OF 226 CA COPYRIGHT 2001 ACS

AN 91:221882 CA

TI Rapid determination of sodium sulfide in aqueous solutions by a UV-spectroscopic method

AU Zhavoronkova, A. Ya.; Kozubenko, M. P.; Babeshko, T. G.

CS USSR

SO Khim. Prom-st., Ser.: Metody Anal. Kontrolya Kach. Prod. Khim. Prom-sti. (1979), (6), 18-20

AB Na₂S was detd. in the presence of ≤ 10 -fold excess Na₂CO₃ and Na silicate by UV spectrometry. The method was used in anal. of solns., suspensions and wastewater from ore beneficiation. The sample was filtered and the absorbance of the filtrate was measured at 220 nm. The calibration curve was plotted for 0.5-10 mg Na₂ S/L. The relative error was 10 %.

L28 ANSWER 183 OF 226 CA COPYRIGHT 2001 ACS

AN 86:176970 CA

TI Spectrophotometric determination of sulfide in water

AU Armstrong, F. A. J.

CS Anal. Chem. Group, Freshwater Inst., Winnipeg, Manitoba, Can.

SO ASTM Spec. Tech. Publ. (1975), 573 (Water Qual. Parameters, Symp., 1973), 14-19

AB HS- has a high absorbance in the UV. In soln., it predominates at pH > 8 and is negligible $< \text{pH } 5$. Sulfide ≤ 5 mg/L in water can be detd. by the difference between absorbance measurements at 228 nm, first on the sample made alk. with NaOH and then after acidification. Samples can be stabilized with alkali and kept in the dark. Difficulty may be found with colored waters with high UV absorbance and interferences are caused if Ca and Mg are pptd. by alkali.

L28 ANSWER 192 OF 226 CA COPYRIGHT 2001 ACS

AN 81:39747 CA

TI Infrared absorption (435 to 250 cm⁻¹) and ultraviolet emission analyses of selected sulfides and sulfosalts. Correlative study

AU Liese, Homer C.

CS Dep. Geol., Univ. Connecticut, Storrs, Conn., USA

SO Appl. Spectrosc. (1974), 28(2), 135-9

AB Selected sulfides and sulfosalts were investigated 1st by ir absorption (435 to 250 cm⁻¹) anal. and then by uv spectrochem. anal. Results revealed that many of the absorption bands were diagnostic, and that some could be correlated with compositional variations.

L28 ANSWER 193 OF 226 CA COPYRIGHT 2001 ACS

AN 81:14869 CA

TI Absorption bands in electronic spectra of lignins. VI. Lignins from sulfate and sulfite-sulfide pulping of pine

AU Nilsson-Idner, Kristina; Norrstrom, Hans; Teder, Ants

CS Swed. Forest Prod. Res., Stockholm, Swed.

SO Sv. Papperstidn. (1974), 77(2), 60-2

AB There are 2 major differences between the models for pine sulfate and sulfite-sulfide lignins: the band at 3.58 μm^{-1} is ~20% narrower in sulfite-sulfide lignin and the band at 3.10 μm^{-1} in sulfate lignin is shifted to 3.12 μm^{-1} . The 200-650 nm spectra of lignins isolated from the spent liquor of a sulfate and sulfite-sulfide cook on pine are measured in aq. solns. at pH 3-11.5. At high pH values, the intensities of the bands in visible light given by sulfite-sulfide lignin were ~ half of those of the corresponding bands given by sulfate lignin.

L28 ANSWER 207 OF 226 CA COPYRIGHT 2001 ACS

AN 72:9003 CA

TI Spectrophotometric determination of S²⁻, S₂O₃²⁻, S₃O₃²⁻, and S₄O₄²⁻ in aqueous solutions

AU Eremin, Yu. G.; Kiseleva, K. S.

CS Kalinin Polytec. Inst., Kalinin, USSR

SO Zh. Anal. Khim. (1969), 24(8), 1201-4

AB The uv absorption spectra of S²⁻, S₂O₃²⁻, S₄O₄²⁻, and S₃O₃²⁻ in aq. solns. were studied. Pure solns. and mixts. of the anions were used for the study. The sensitivity of the detns. is 0.035, 242.5, 6.44, and 0.138 mg/50 ml for S²⁻ at 240 nm, S₄O₄²⁻ at 210 nm, S₃O₃²⁻ at 220 or 230 nm and S₂O₃²⁻ at 220 nm, resp. The limiting concn. of each anion which does not interfere in the detn. of the other anions is given.

L28 ANSWER 208 OF 226 CA COPYRIGHT 2001 ACS

AN 71:8122 CA

TI Far-ultraviolet spectra of hydrogen and hydroxyl radicals from pulse radiolysis of aqueous solutions. Direct measurement of the rate of H + H

AU Pagsberg, P.; Christensen, H.; Rabani, J.; Nilsson, G.; Fenger, J.; Nielsen, S. O.

CS Danish At. Energy Comm. Res. Estab., Risoe, Den.

SO J. Phys. Chem. (1969), 73(4), 1029-38

AB Pulse radiolytic absorption transients have been observed in aq. solns. between 200 and 300 nm. by using an 11-Mev. Linac and an optical detection system that allowed accurate measurements (a) down to 200 nm. and (b) 0.2 $\mu\text{sec.}$ after the electron pulse. With 10⁻³M HClO₄ + 0.027 M H₂ (p(H₂) = 35 atm.), transients with 2nd order decay were observed which had amplitudes that decayed monotonically in the region from 200 to 240 nm. Assigning these transients to free H atoms, the molar decadic absorptivities ϵ at 200, 210, and 240 nm. of H were 900, 560, and 0M⁻¹cm⁻¹, resp., and 2kH+H = (1.55 \pm 0.10) $\times 10^{10}$ M⁻¹sec⁻¹ from measurements at 200 and 210 nm. The transients could be completely quenched by addn. of O₂ resulting in a species with the absorption spectrum of HO₂. Furthermore, the transient at 210 nm. was not affected when HClO₄ was left out of the H₂-satd. soln. and N₂O (>2 $\times 10^{-3}$ M) was added instead. The apparent OH transient in 2 $\times 10^{-3}$ M N₂O (no H₂) decayed according to 2nd-order kinetics with a calcd. rate const. that after correction for the reaction of H with OH was (1.04 \pm

0.10) $\times 10^{10} \text{M}^{-1} \text{sec}^{-1}$, independent of the wavelength used. The calcd. ϵ for OH showed, after correction for the absorbance of H_2O_2 , H, and OH^- , one broad absorption max. near 230 nm. with ϵ 530 $\text{M}^{-1} \text{cm}^{-1}$ and one below 200 nm. The measurements at 200 nm. had to be corrected for a substantial contribution from OH^- to the observed optical absorption. The calcd. values of ϵ_{H} and ϵ_{OH} account quant. at all wavelengths used for the initial absorption of the transients in 10^{-3}M HClO_4 (no H_2) if it is assumed that H_3O^+ , if formed, decomp to yield $\text{H} + \text{H}_2\text{O}$ after no longer than $0.2 \mu\text{sec}$. The light absorption of aq. solns. of H and to some extent of OH at 20 nm. is attributed to a red shift of the H_2O absorption continuum beginning at 186 nm., caused by a partial electron transfer from the 1st excited singlet state of H_2O to a neighboring H or OH free radical in analogy with the optical transition assocd. with the β bands in alkali halide crystals.

=> log y

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